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ALCATEL INTERNETWORKING SYSTEM, INC.  
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EXAMINER

KADING, JOSHUA A

ART UNIT	PAPER NUMBER
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2661

DATE MAILED: 01/16/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/679,138

Applicant(s)

HILL ET AL.

Examiner

Joshua Kading

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-11 and 25-28 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-7, 12-19, 21-24 and 29-30 is/are rejected.
- 7) ☒ Claim(s) 3, 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: .

## DETAILED ACTION

### *Oath/Declaration*

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is  
5 required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

10 It does not identify the mailing address of each inventor. A mailing address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing address should include the ZIP Code designation. The mailing address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

15 It is also noted that the residence of the last inventor is "Californiacx". This is an unknown residence. Appropriate correction is required.

### *Claim Objections*

Claims 1, 4, 5, 9, 10, 11, 14, 18, 21, 22, 26, 27, 28, objected to because of the following informalities:

20 Claim 1, line 8 states, "inputs to respective one or more of lookups". It should read, --inputs to a respective one or more lookups--.

Claim 4, line 26 states, "respective ones of lookups". It should read, --respective lookups--.

Claim 5, line 33 states, "more of portions". It should read, --more portions--.

25 Claim 5, line 1 of page 11 states, "respective consecutive one or more of lookups". It should read, --a respective one or more lookups--.

Claim 9, lines 26-28 state, "the ones of outputting steps...respective ones of recursion". It should read, --outputting steps...respective recursion--.

Claim 10, line 31 of page 11 and lines 1-2 of page 12 state, "the ones of outputting steps...outputting ones of indicators". It should read, --the outputting  
5 steps...outputting indicators--.

Claim 11, lines 5-6 state "the ones of outputting steps...outputting ones of indicators". It should read, --the outputting steps...outputting indicators--.

Claim 14, line 33 states, "for transmitting ones of". It should read, --for transmitting--.

10 Claim 18, line 22 states, "inputs to respective one or more of lookups". It should read, --inputs to a respective one or more lookups--.

Claim 21, lines 7-8 state, "respective ones of lookups". It should read, --respective lookups--.

Claim 22, line 16 states, "more of portions". It should read, --more portions--.

15 Claim 22, line 17 states, "respective consecutive one or more of lookups". It should read, --a respective one or more lookups--.

Claim 26, lines 11-12 state, "respective ones of recursion". It should read, --respective recursion--.

Claim 27, line 16 states, "outputting ones of indicators". It should read,  
20 --outputting indicators--.

Claim 28, line 21 states, "outputting ones of indicators". It should read, --outputting indicators--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

5 form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

10 (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

15 Claims 1, 2, 4-7 and 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Irwin (U.S. Patent 6,052,683).

In regard to claim 1, Irwin discloses “a method for determining packet processing data, comprising the steps of:

20 receiving a packet (col. 10, line 66 where the incoming destination address means that a packet, as described in Table A1 in col. 3, was received);

forming a plurality of subtuples for the packet from flow properties associated with the packet (col. 3, Table A1 where some fields descriptive about the flow properties of the packet such as destination address, source address, etc. can be considered tuples  
25 and the different bytes of the destination address, for example, can be considered subtuples);

applying one or more of the subtuples as respective inputs to [a] respective one or more lookups (col. 10, lines 66-67 and col. 11, line 1 where the first byte of the destination lookup is a subtuple applied to the binary tree or lookup); and

5       returning packet processing data as an output from at least one of the lookups (col. 11, lines 2-5 where the list that is generated contains information on packet processing)."

In regard to claim 2, Irwin discloses "the method according to claim 1, further comprising the steps of:

10       returning a nickname as an output from at least one of the lookups (col. 11, lines 2-5 where the nickname used is the /6); and

applying the nickname as an input to at least one of the lookups (col. 11, lines 5-12 where the CAM is the lookup using the nickname to search)."

15       In regard to claim 4, Irwin discloses "the method according to claim 1, wherein fewer than all of the plurality of subtuples are applied as the respective inputs to the respective lookups (col. 10, lines 66-67 and col. 11, line 1 where not all of the subtuples are applied to the lookups, in this instance only the first two bytes or subtuples of the destination address are applied)."

20

In regard to claim 5, Irwin discloses "a method for determining packet processing data, comprising the steps of:

receiving a packet (col. 10, line 66 where the incoming destination address means that a packet, as described in Table A1 in col. 3, was received);

forming a tuple for the packet including a plurality of flow properties associated with the packet (col. 3, Table A1 where some fields descriptive about the flow properties of the packet such as destination address, source address, etc. can be considered tuples and where the combination of these tuples is simply another tuple made of the flow properties of the packet); and

applying one or more portions of the tuple to [a] respective one or more lookups until packet processing data are returned (col. 10, lines 66-67 and col. 11, line 1 where the destination address portion of the flow properties tuple is used as an input to the lookup; col. 11, lines 2-5 where the list that is generated contains information on packet processing)."

In regard to claim 6, Irwin discloses "the method according to claim 5, further comprising the step of: returning an indicator with the packet processing data to indicate the return of the packet processing data (figure 1 where the first set of bits in each class identifies the class type which also indicates a return of the data as these types of data are returned in response to lookups as defined by the CAM table in col. 12 for instance)."

In regard to claim 7, Irwin discloses "the method according to claim 6, wherein the indicator is returned prior to applying all portions of the tuple to the lookups (col. 10,

lines 66-67 and col. 11, lines 1-23 since only the destination address, and not all portions of the destination address were used, and the address was returned from the CAM table, the indicator is thus returned before all portions of the tuple are applied to the lookup)."

5

In regard to claim 14, Irwin discloses "a switching interface for a data communication switch, comprising:

an access controller having a port for receiving a packet (col. 10, line 66 where the incoming destination address means that a packet, as described in Table A1 in col. 3, was received and in order for the packet to be received there must be a port); and

10 a switching engine coupled to the access controller for receiving the packet from the access controller, for determining a tuple for the packet including a plurality of flow properties, for transmitting ones of portions of the tuple to a database element, and for receiving packet processing data from the database element in response to one of the portions (figure 4 shows access controller 70, and although the switching engine is not mentioned it is inherent in the design because the tuples are used to lookup further routing information for the packets; col. 3, Table A1 where some fields descriptive about the flow properties of the packet such as destination address, source address, etc. can be considered tuples; col. 10, lines 66-67 and col. 11, line 1 where the destination  
15 address portion of the flow properties tuple is used as an input to the lookup and in order to get to the lookup it must be transmitted; col. 11, lines 2-5 where the list that is generated contains information on packet processing)."

20



In regard to claim 15, Irwin discloses "the switching interface according to claim 14, wherein the flow properties include a destination address (col. 3, Table A1, Field-Destination Address)."

5

In regard to claim 16, Irwin discloses "the switching interface according to claim 15, wherein the flow properties include a source address, a port, and a quality of service (col. 3, Table A1, Fields- Source Address, Service Type identifies the quality of service and col. 6, lines 64-67 where the port from the mux comes from the information in the header of the packet thus the port information is contained within the flow properties)."

10

In regard to claim 17, Irwin discloses "the switching interface according to claim 14, wherein the received packet processing data include a plurality of packet flow information (col. 13, CAM table where it is clear that for each prefix or input to the lookup there is a plurality of packet processing data)."

15

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

20

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25

Claims 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin.

In regard to claim 18, Irwin discloses "a switching interface for a data  
5 communication switch, comprising:  
...receiving a packet (col. 10, line 66 where the incoming destination address means that a packet, as described in Table A1 in col. 3, was received);  
means for forming a plurality of subtuples for the packet from flow properties associated with the packet (figure 4, element 70 separates the various parts of the  
10 header for use; col. 3, Table A1 where some fields descriptive about the flow properties of the packet such as destination address, source address, etc. can be considered tuples and the different bytes of the destination address, for example, can be considered subtuples);  
means for applying one or more of the subtuples as respective inputs to [a]  
15 respective one or more lookups (figure 4, the connections between the components allow for a means of applying the subtuples as inputs to the lookups; col. 10, lines 66-67 and col. 11, line 1 where the first byte of the destination lookup is a subtuple applied to the binary tree or lookup); and  
means for returning packet processing data as an output from at least one of the  
20 lookups (figure 4, the connections between the components allow for a return path for the data; col. 11, lines 2-5 where the list that is generated contains information on packet processing)."

However, Irwin lacks a means for receiving a packet. It would have been obvious to one with ordinary skill in the art at the time of invention to include the means for receiving a packet because it is necessary to have if the system is to accept incoming data. The motivation for having a means for receiving a packet being that it allows the  
5 system to communicate with devices outside itself.

In regard to claim 19, Irwin discloses "means for returning a nickname as an output from at least one of the lookups (figure 4, the connections between the components allow for a return path for the data; col. 11, lines 2-5 where the nickname  
10 used is the /6); and

means for applying the nickname as an input to at least one of the lookups (figure 4, the connections between the components allow for a means of applying the nickname as an input to the lookups; col. 11, lines 5-12 where the CAM is the lookup using the nickname to search)."

15 However, Irwin lacks the means for receiving a packet as in parent claim 18. It would have been obvious to one with ordinary skill in the art at the time of invention to include the means for receiving a packet because it is necessary to have if the system is to accept incoming data. The motivation for having a means for receiving a packet being that it allows the system to communicate with devices outside itself.

20

In regard to claim 21, Irwin discloses "fewer than all of the plurality of subtuples are applied as the respective inputs to the respective lookups (col. 10, lines 66-67 and

col. 11, line 1 where not all of the subtuples are applied to the lookups, in this instance only the first two bytes or subtuples of the destination address are applied)."

However, Irwin lacks the means for receiving a packet as in parent claim 18. It would have been obvious to one with ordinary skill in the art at the time of invention to  
5 include the means for receiving a packet because it is necessary to have if the system is to accept incoming data. The motivation for having a means for receiving a packet being that it allows the system to communicate with devices outside itself.

In regard to claim 22, Irwin discloses "a switching interface for a data  
10 communication switch, comprising:

...receiving a packet (col. 10, line 66 where the incoming destination address means that a packet, as described in Table A1 in col. 3, was received);

means for forming a tuple for the packet including a plurality of flow properties associated with the packet (figure 4, element 70 separates the various parts of the  
15 header for use; col. 3, Table A1 where some fields descriptive about the flow properties of the packet such as destination address, source address, etc. can be considered tuples and where the combination of these tuples is simply another tuple made of the flow properties of the packet); and

means for applying one or more portions of the tuple to [a] respective one or  
20 more lookups until packet processing data are returned (figure 4, the connections between the components allow for a means of applying the subtuples as inputs to the lookups; col. 10, lines 66-67 and col. 11, line 1 where the destination address portion of

the flow properties tuple is used as an input to the lookup; col. 11, lines 2-5 where the list that is generated contains information on packet processing)."

However, Irwin lacks a means for receiving a packet. It would have been obvious to one with ordinary skill in the art at the time of invention to include the means for receiving a packet because it is necessary to have if the system is to accept incoming data. The motivation for having a means for receiving a packet being that it allows the system to communicate with devices outside itself.

In regard to claim 23, Irwin discloses "means for returning an indicator with the packet processing data to indicate the return of the packet processing data (figure 4, where the connections allow for a way to return the indicator; figure 1 where the first set of bits in each class identifies the class type which also indicates a return of the data as these types of data are returned in response to lookups as defined by the CAM table in col. 12 for instance)." However, Irwin lacks the means for receiving a packet as in parent claim 22. It would have been obvious to one with ordinary skill in the art at the time of invention to include the means for receiving a packet because it is necessary to have if the system is to accept incoming data. The motivation for having a means for receiving a packet being that it allows the system to communicate with devices outside itself.

In regard to claim 24, Irwin discloses "the indicator is returned prior to applying all portions of the tuple to the lookups (col. 10, lines 66-67 and col. 11, lines 1-23 since

only the destination address, and not all portions of the destination address were used, and the address was returned from the CAM table, the indicator is thus returned before all portions of the tuple are applied to the lookup)." However, Irwin lacks the means for receiving a packet as in parent claim 23. It would have been obvious to one with  
5 ordinary skill in the art at the time of invention to include the means for receiving a packet because it is necessary to have if the system is to accept incoming data. The motivation for having a means for receiving a packet being that it allows the system to communicate with devices outside itself.

10 Claims 12-13 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin in view of Li et al. (U.S. Patent 6,567,408 B1).

In regard to claim 12, Irwin discloses "a method for determining packet processing data, comprising the steps of:

15 receiving a packet (col. 10, line 66 where the incoming destination address means that a packet, as described in Table A1 in col. 3, was received);

forming a tuple for the packet including a first subtuple identifying a first flow property associated with the packet (col. 3, Table A1 where some fields descriptive about the flow properties of the packet such as destination address, source address,  
20 etc. can be considered tuples and where the combination of these tuples is simply another tuple made of the flow properties of the packet)...

applying the first sup tuple to a database element (col. 10, lines 66-67 and col. 11, line 1 where the first byte of the destination lookup is a subtuple applied to the binary tree or database element)...

However, Irwin lacks "...a second subtuple identifying a second flow property  
5 associated with the packet..." and "...returning data from the database element in response to the first subtuple to preempt application of the second subtuple to the database element."

Li however, discloses "...a second subtuple identifying a second flow property associated with the packet (col. 7, lines 32-65 where individual or any combination of  
10 the properties can be used to create a subtuple)..." and "...returning data from the database element in response to the first subtuple to preempt application of the second subtuple to the database element (col. 9, lines 1-7 where the first table used the first subtuple as can be seen in figure 7A and the pointer acts as the database element that preempts the application of the second subtuple or parameter)."

15 It would have been obvious to one with ordinary skill in the art at the time of invention to include the forming of the tuples and subtuples with the applying the tuples to lookup tables for the purpose of classifying the packet. The motivation for including the forming of tuples and subtuples and applying the tuples is to provide fast, efficient classification of packets.

20

In regard to claim 13, Irwin and Li disclose the method of claim 12. However, Irwin lacks "the returned data includes packet processing data." Li however, further

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discloses "the returned data includes packet processing data (figure 7A, elements 63'; where the classes of elements 63' are similar, if not the same, as in Tables I, II, III)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the packet processing data with the method of claim 12 for the same reasons  
5 and motivation as in claim 12.

In regard to claim 29, Irwin discloses "a switching interface for a data communication switch, comprising:

...receiving a packet (col. 10, line 66 where the incoming destination address  
10 means that a packet, as described in Table A1 in col. 3, was received);

means for forming a tuple for the packet including a first subtuple identifying a first flow property associated with the packet (figure 4, element 70 separates the various parts of the header for use; col. 3, Table A1 where some fields descriptive about the flow properties of the packet such as destination address, source address, etc. can be  
15 considered tuples and where the combination of these tuples is simply another tuple made of the flow properties of the packet)...

means for applying the first suptuple to a database element (figure 4, the connections between the components allow for a means of applying the subtuples as inputs to the lookups; col. 10, lines 66-67 and col. 11, line 1 where the first byte of the  
20 destination lookup is a subtube applied to the binary tree or database element)...

However, Irwin lacks "...a second subtuple identifying a second flow property associated with the packet...", "...returning data from the database element in response



to the first subtuple to preempt application of the second subtuple to the database element" and "means for receiving a packet."

Li however, discloses "...a second subtuple identifying a second flow property associated with the packet (col. 7, lines 32-65 where individual or any combination of the properties can be used to create a subtuple)...", "...returning data from the database element in response to the first subtuple to preempt application of the second subtuple to the database element (col. 9, lines 1-7 where the first table used the first subtuple as can be seen in figure 7A and the pointer acts as the database element that preempts the application of the second subtuple or parameter)" and "means for receiving a packet (figure 1, where the element 24 is equipped for receiving packets)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the receiving of packets and forming of the tuples and subtuples with the applying the tuples to lookup tables for the purpose of classifying the packet. The motivation for including the forming of tuples and subtuples and applying the tuples is to provide fast, efficient classification of packets.

In regard to claim 30, Irwin and Li disclose the interface of claim 29. However, Irwin lacks "the returned data includes packet processing data." Li however, further discloses "the returned data includes packet processing data (figure 7A, elements 63'; where the classes of elements 63' are similar, if not the same, as in Tables I, II, III)." It would have been obvious to one with ordinary skill in the art at the time of invention to

include the packet processing data with the interface of claim 29 for the same reasons and motivation as in claim 29.

***Allowable Subject Matter***

5           Claims 3 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10           The following is a statement of reasons for the indication of allowable subject matter: Claims 8-11 and 25-28 are allowed because the prior art of record fails to teach, in combination with other claim limitations, "...the nickname having a lower bit count than the first lookup key."

15           Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (703) 305-0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

          If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

20           Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

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Joshua Kading  
Examiner  
Art Unit 2661



JK

January 9, 2004

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**KENNETH VANDERPUYE**  
**PRIMARY EXAMINER**